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FOR: METHOD FOR APPLYING RETROREFELCTIVE  
TARGET TO A SURFACE



1 that are flat or cylindrical. The spacing of the reflectors (targets) becomes expensive as  
2 the reflector material is scraped while the spaces are created. The spacing in this  
3 configuration is precise and can only be changed with new tooling.

4 What is thus desired is to provide a method of applying retroreflective targets  
5 with the spacing therebetween independent of the target, or application surface  
6 construction.

#### 8 SUMMARY OF THE PRESENT INVENTION

9 The present invention provides a method for transferring retroreflective  
10 members, formed as an assembly, in a predetermined sequence to a target surface. The  
11 target assembly, in a preferred embodiment, comprises a transfer sheet having openings  
12 formed therein, retroreflective targets positioned in the openings and a base member  
13 adhering to the bottom surface of the transfer member, a pressure sensitive adhesive layer  
14 being secured to the second surface of said base member. The assembled targets are  
15 positioned on a liner in a predetermined pattern and the liner is then wound in a roll in a  
16 manner such that the targets are positioned on the outside of the roll. When the targets  
17 are to be applied to a surface, the roll is unwound with the pressure surface adhesive  
18 facing the surface, the targets then being pushed against the surface such that the  
19 adhesive secures the targets thereto.

20 The present invention thus provides a simple and cost efficient method for  
21 applying retroreflective targets to a surface with the spacing therebetween independent of  
22 the target surface construction allowing for a wide range of spacing. The target

1 assemblies are discrete and applied independently which allows the targets in turn to be  
2 applied to any shaped surface configuration.

3  
4 BRIEF DESCRIPTION OF THE DRAWINGS

5 For a better understanding of the present invention as well as other objects and  
6 further features thereof, reference is made to the following description which is to be read in  
7 conjunction with the accompanying drawing therein:

8 Figure 1 is an assembly view of a retroreflective assembly member constructed in  
9 accordance with the preferred embodiment of the present invention;

10 Figure 2 is the assembled member of Figure 1 in sectional form;

11 Figure 3 shows assembled transfer members positioned on a liner, or carrier, tape;

12 Figure 4 illustrates the liner tape of Figure 3 formed in a roll;

13 Figure 5 shows the target assemblies of Figure 4 ready for application to a  
14 surface;

15 Figure 6 shows the target assemblies of Figure 5 applied to a surface;

16 Figure 7 shows an assembly view of a retroreflective assembly member  
17 constructed in accordance with a second embodiment of the present invention;

18 Figure 8 is the assembly member of Figure 7;

19 Figure 9 illustrates assembled targets positioned on a liner tape;

20 Figure 10 illustrates the liner tape of Figure 9 formed in a roll;

21 Figure 11 shows the target assemblies of Figure 10 ready for application to a  
22 surface; and

23 Figure 12 shows the target assemblies of Figure 11 applied to a surface.



1 adhesive attached thereto. Transfer medium 14 is a double coated tape constructed to  
2 adhere to the target and liner member 22 to allow the transfer of the target at its final  
3 application to the desired surface. The liner member 22 can be either paper or plastic as  
4 determined by the targets and adhesives being used.

5 Examples of surfaces to which targets have been successfully transferred include  
6 aerospace composites, metals and plastics.

7 Retroreflective member 10 is fabricated as follows:

- 8 1. Base member 16 is applied to liner member 22;
- 9 2. The die-cut transfer layer 14 is, laminated to the base member 16;
- 10 3. Retroreflectors 12 are placed in transfer layer 14; and
- 11 4. Individual target assemblies 10 are placed on liner member 22 to form roll  
12 24.

13 As the target assemblies are wound into the roll; they are wound on the outside of  
14 the liner. Thus, the final outside layer of roll 24 is the liner member 12.

15 Figures 7-12 illustrate a second embodiment of the invention wherein the target  
16 retroreflector is built into the base layer. In particular, Figure 7 shows an assembly view  
17 of a target assembly 36 comprising transfer layer 30 and a target member 32 formed as  
18 part of base layer having a pressure sensitive layer 34 formed on the bottom surface of  
19 target member 32 (Figure 8). Figure 9 illustrates a plurality of target members 36 secured  
20 to a liner member 38 via adhesive layers 32 and Figure 10 shows the liner 38 member  
21 formed into a roll 40 (although the roll portions 41 and 43 are shown spaced apart, they  
22 are in fact spaced so that for example, the target assemblies 36 on section 41 are in  
23 contact with the adjacent liner member 38). Figure 11 shows target members 36 in

1 position for application to a surface and Figure 12 illustrates spaced apart target member  
2 applied to a surface 42.

3 Although the present invention is particularly useful in applying retroreflective  
4 members to a surface, it also can be utilized to apply other items to a surface. For  
5 example, a decorative piece can be used in place of the retroreflective member and  
6 applied to decorate a ceramic surface or plate. In addition, the method of the present  
7 invention can be utilized to apply thermal transfers to decorate fabric.

8 While the invention has been described with reference to its preferred embodiments,  
9 it will be understood by those skilled in the art that various changes may be made and  
10 equivalents may be substituted for elements thereof without departing from the true spirit  
11 and scope of the invention. In addition, many modifications may be made to adapt a  
12 particular situation or material to the teachings of the invention without departing from its  
13 essential teachings.